Preliminary

Drainage Report

For

Lucerne Valley Desert View Solar

San Bernardino County, CA

November, 2011

United Engineering Group - California
3595 Inland Empire Blvd
Suite 2200
Ontario, CA 91764

Tel: (909) 466-9240
Fax: (909) 989-8401

Provided for:

Silverado Power
44 Montgomery
Suite 3065
San Francisco, CA 94104

Project # 40003

This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herin. The registered civil engineer has also judged the qualifications of any employees that have provided data and calculations upon which the recommendations, conclusions, and decisions are based.

11-14-11

Christopher F. Lenz, PE 63001

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1 INTRODUCTION

1.1. SITE DESCRIPTION

1.1.1. LOCATION

The Lucerne Valley Desert View Solar project is located in an unincorporated area of San Bernardino County on the eastern edge of Apple Valley, and the western edge of Lucerne Valley. The site is more specifically located just south of Highway 18 along the western edge of Canyon View Road. Legally, it is parcels 0435-132-001 and 0435-083-039. See Exhibit A.

1.1.2. EXISTING FEATURES

The site consists of 360 gross acres with the project site being proposed on just 198 acres. The site has typical characteristics of desert lands in the area, with varying slopes, sparse desert scrub cover, and seasonal washes. The southern portion of the site (south of the regional wash) drains to the north at an average of roughly 5%. The Northern portion of the site (north of the regional wash) drains to the northeast at an average of roughly 2%. There is a regional wash that traverses the site form west to east approximately 600 feet south of Desert View Road.

1.1.3. PROPOSED CONDITION

It is proposed that the subject property be developed to permit a 20MW solar generation facility per the request of the client. Access to the site will be from Highway 18, Desert View Road and Canyon View Road. The site will be fenced for security with access into the site through 30' wide entry gates.

1.2. PURPOSE OF REPORT

The purpose of this report is to analyze the hydrology of the landscape and to recommend how best to place the proposed solar panels, access roads, and fencing in a way to maintain and not impact the natural drainage patters and flows. Where necessary, the report will also analyze where control measures will be recommended to convey the flows and return them to their historical flow locations.

1.3. METHODOLOGY

The offsite tributary areas were identified and delineated using available USGS maps and cross checked with available aerial maps for accuracy. A physical site investigation was conducted to determine the existing runoff conditions. The existing culverts were analyzed in a full flow condition to determine the peak flow rates potentially impacting the subject site. Refer

1.4. FEMA INFORMATION

This area has not been mapped by FEMA. The Flood Insurance Rate Map Index (Panel 06071CINDB) indicates that the site falls within Map 06071C6550H yet that panel is not printed and all areas are within Zone D. Zone D is described as areas in which flood hazards are undetermined, but possible.

2. EXISTING DRAINAGE PATTERNS

2.1. OFFSITE

There are four washes of significant size that cross the property line of the subject site. As they are unnamed washes they have been identified for purpose of this report as A through D. Refer to Exhibit B. There is a BNSF rail line that runs along the southern portion of the subject site. It seems that as part of the construction and maintenance of the rail line, someone has diverted and concentrated some of the historical flows as they run north out of the foothills. Refer to Exhibit C for the results of a field walk and visual inspection.

Wash A

There are two washes that impact the southern boundary. The largest of the Southern contributing areas is 817 acres that flows out of Lovelace Canyon. This blueline wash is shown on USGS maps and as seen on aerial maps as previously crossing the rail line, then continuing north and east across the southeast corner of the subject site. The wash has been diverted to the west, by a series of berms, low points that route the runoff to the west, and a constructed culvert crossing of the railroad. The crossing is 3 72" CMP's placed under the railroad tracks with a grouted riprap outlet. It appears to be in good functioning condition, with only minor scour at the outlet. While runoff may continue to the west along the rail line, for purpose of this report, we assume that the pipes are capable of full flow. The full flow capacity of these pipes is 659 cfs per barrel or 1,977 cfs total for the crossing. From the culver outlet, the runoff proceeds to the north and east along a newly formed flow path (due to the diversion) that continues until meeting up with the regional wash that runs west to east across the property.

Wash B

Wash B also intersects the southern boundary. The contributory area is roughly 270 acres. The wash crosses under the rail line at a constructed culvert crossing of the railroad. The crossing is 3 36" CMP's placed under the railroad tracks with an open outlet. At the time of site walk it appeared to be in good functioning condition, although review of historical aerial photos show that it is prone to blocking from sediment. In the event that the culverts plug, the water would continue to flow north over the rail

line, or continue to the west to another flow path (wash C). The full flow capacity of these pipes is 79 cfs per barrel or 237 cfs total for the crossing. That water proceeds to the northeast until meeting up with the new diverted flow path of wash A.

Wash C
Wash C intersects the property along the western boundary. The contributory area is roughly 602 acres. The wash crosses under the rail line at a constructed culvert crossing of the railroad. The crossing is single 72" CMP's placed under the railroad tracks with an open outlet. At the time of site walk it appeared to be in good functioning condition. That water proceeds to the northeast until meeting up with the regional wash and continuing to the east.

Wash D
Wash D intersects the property along the western boundary. Wash D is a regional wash that has a large tributary area reaching into the Fizzben Heights, Rock Springs, and Arrastre Canyon watersheds. As these watersheds drain to the north they converge and then flow to the east until eventually terminating in the dry lake bed named Rabbit Lake. A recent ruling from the Army Corps of Engineers found that the washes in this region that lead to the dry lake beds do not meet the criteria to be identified as jurisdictional waters. Copies of portions of this determination are included in Appendix A.

2.2. ONSITE

There are no major concentrations of runoff that originate within the project area as the grade lends to sheet flow conditions eventually draining into the large regional wash (Wash D). Sheet flow that originates on the southern area drains to the north. Sheet flow that originates on the northern area drains to the south.

3. PROPOSED DRAINAGE PATTERNS

3.1. OFFSITE

Offsite flows will be avoided by the project development area, and allowed to continue unimpeded across the property. Refer to the site plan (Appendix B) and Exhibits B and C. While the results of field inspection identified that Wash A has been routed to the west along the rail line, the berms could fail in a high flood event, and thus the site plan has reserved a flow path for the potential break out that follows the historical route and maintains the historical wash. There are no proposed structures of any kind to collect or control the offsite washes. The development area has been placed to avoid existing washes and permit plenty of area for future master

regional drainage control, including channelization, basins, or control structures.

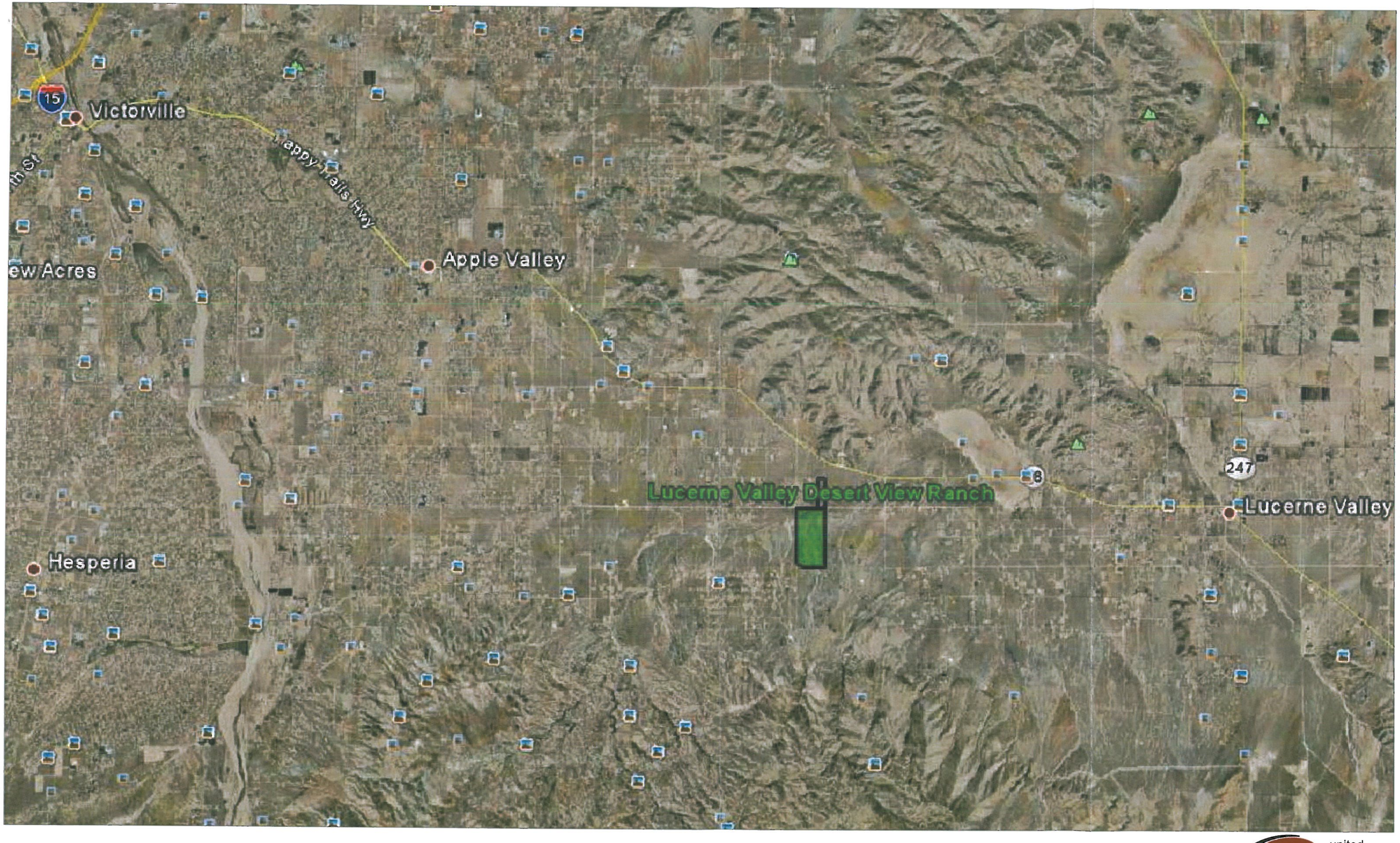
3.2. ONSITE

Runoff that originates on site will be allowed to drain along the historical path to the north and south in a sheet flow condition. Installation of the posts that the panels are mounted on are pneumatically placed following the existing grades. This installation process allows the existing flow patterns to be preserved within the solar fields. The increased runoff will be held in each "field" by the perimeter roads. The roads are to be designed at existing grade on the high sides of each "field" to allow for runoff to flow over the road unimpeded. On the low sides, the roads are to be designed slightly higher than the existing grade to provide storage volume of sufficient size to retain the increased runoff in each "field". This approach is very similar to the methods used by farmers. Since the panels sit a minimum height and there are no inhabitable structures, short term ponding of runoff while it infiltrates into the soil does not impact the project operation. At time of final design, grades for each "field" will be set in conjunction with the runoff requirements of the final drainage report.

REFERENCES

1. San Bernardino Hydrology Manual, August 1986.

2. USGS National Map Viewer; http://viewer.nationalmap.gov/viewer



LUCERNE SOLAR - VICINITY MAP

SAN BERNARDINO COUNTY, CA

NOT TO SCALE

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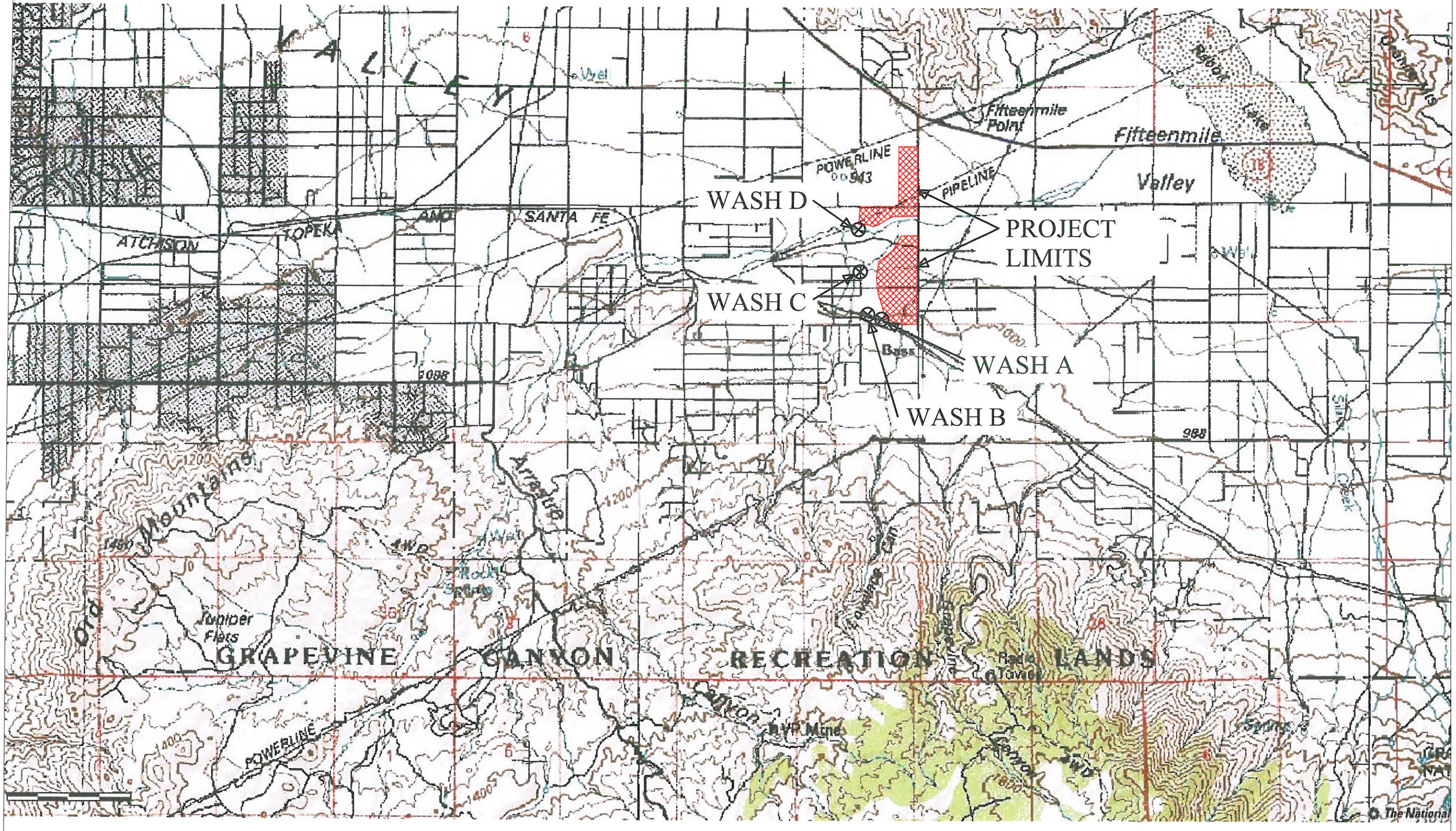
EXHIBIT A



LUCERNE SOLAR - USGS MAP

SAN BERNARDINO COUNTY, CA

NOT TO SCALE

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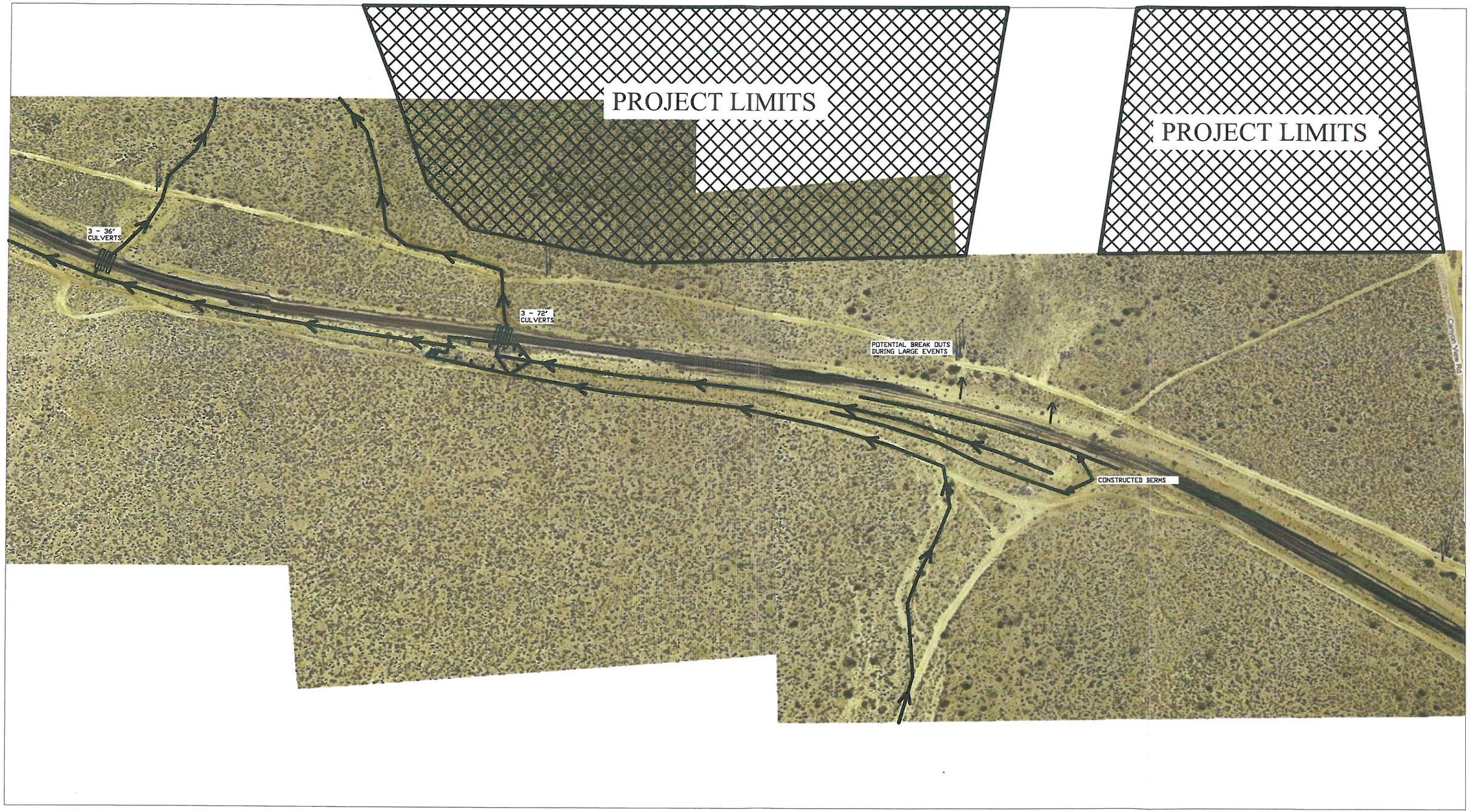
EXHIBIT B



LUCERNE SOLAR - FIELD OBSERATON RESULTS

SAN BERNARDINO COUNTY, CA

NOT TO SCALE

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EXHIBIT C

Appendix A

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): November 16, 2010

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:Los Angeles District, Granite Mountain Wind Project, SPL-2010-00791-SLP, JD-2

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State:CA County/parish/borough: San Bernardino City: near Apple Valley
Center coordinates of site (lat/long in degree decimal format): Lat. 34.55051° N, Long. -117.04102° W.
Universal Transverse Mercator:
Name of nearest waterbody: Lucerne Lake
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: NA
Name of watershed or Hydrologic Unit Code (HUC): Southern Mojave watershed
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☒ Office (Desk) Determination. Date: November 15, 2010
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]
☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** *"waters of the U.S."* within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☒ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: 8035-linear feet: width (ft) and/or 1.37- acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Established by OHWM.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: **This JD-2 pertains specifically to the non-RPW project waters (Drainages #W10–W15, #W37-W46, #W106-**

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

W109) that ultimately drain from the southeastern portions of the project site (southern subwatershed) to Lucerne dry lake.

All project Drainages #W10-W46 and #W100-W110 have been defined as non-RPWs ranging in length from 179-feet to 7243-feet long. The project site is hydrologically divided in a north-south direction, with the western half situated within the Northern Mojave watershed and the eastern half situated within the Southern Mojave watershed. The western half of the project site (Drainages #W21 –W26, #W36, #W101) ultimately drains 3-miles west to Apple Valley dry lake. The eastern half of the project site ultimately drains to Lucerne dry lake. The eastern half of the project site is further subdivided into northern and southern subwatersheds. The northern subwatershed (Drainages #W16 – W20, #W27-W35, #W100, #W102-W105, #W110) first drains to the east and northeast around Granite Mountain topographic high points, then drains southward ultimately to Lucerne dry lake (for a total distance of roughly 3-miles or more). The southern subwatershed (Drainages #W10–W15, #W37-W46, #W106-W109) drains in a southeast direction directly into Lucerne dry lake (for a total distance of roughly 0.25-mile to 2.50-miles).

Lucerne and Apple Valley dry lakes are both intrastate dry lakes. The non-RPWs typically convey flows in response to major storm events, with typical annual rainfall totals averaging 6- to 8-inches in these areas.

Lucerne dry lake is the elevational low point for the project drainages that fall within this local (eastern) area of Southern Mojave watershed, serving as the terminus for Drainages #W10-W20, #W27-W35, #W37-W46, #W100, #W102-W110, as well as for all other waters within this isolated intermontane basin. All surface flows that enter Lucerne dry lake percolate into the groundwater table. Surface waters for this Lucerne dry lake system are isolated from the Mojave River (located 15-aerial miles further to the west) by mountains that surround the dry lake on its west, north and eastern boundaries.

Apple Valley dry lake is the elevational low point for the project drainages that fall within this local (western) area of Northern Mojave watershed, serving as the terminus for Drainages #W21 –W26, #W36, #W101, as well as for all other waters within this isolated intermontane basin. All surface flows that enter Apple Valley dry lake percolate into the groundwater table. Surface waters for the Apple Valley dry lake system are isolated from the Mojave River (located 5.5-aerial miles further to the west) by mountains that surround the dry lake on its west and southwest boundaries.

Lucerne Lake, as the terminus for the 40 non-RPWs, is NOT a TNW. Moreover, Lucerne Lake is NOT an (a)(3) water as defined by 33 CFR 328.3. Lucerne Lake does NOT meet criteria (a)(3)(i-iii), as it: i) DOES NOT have use for surface water recreation or other purposes by foreign or interstate travelers, ii) DOES NOT have harvesting activities of fish or shellfish that may be sold in interstate or foreign commerce, and iii) DOES NOT have surface water industrial usage by industries in interstate commerce. Apple Valley Lake, as the terminus for the 8 non-RPWs, is also NOT a TNW. Moreover, Apple Valley Lake is NOT an (a)(3) water as defined by 33 CFR 328.3. Apple Valley Lake does NOT meet criteria (a)(3)(i-iii), as it: i) DOES NOT have use for surface water recreation or other purposes by foreign or interstate travelers, ii) DOES NOT have harvesting activities of fish or shellfish that may be sold in interstate or foreign commerce, and iii) DOES NOT have surface water industrial usage by industries in interstate commerce. Lastly, Drainages #W10-W46 and #W100-W110 themselves are NOT (a)(3) waters as defined by 33 CFR 328.3. The above is based upon the Addendum JD Report (dated September 21, 2010, prepared by Tetra Tech), the 2009 Town of Apple Valley General Plan, the online Wikipedia page on Lucerne Valley, CA, and the review of aerial photographs (Google Earth) that also did not show surface water usage of the project drainages or dry lakes. Therefore, since Lucerne Lake and Apple Valley Lake are isolated waters without a surface water connection to commerce, these 48 total non-RPWs as part of these overall watershed systems are also isolated and additionally have no nexus to commerce.

Based on the above information, the Corps concludes that Drainages #W10-W46 and #W100-W110 (isolated non-RPWs) are NONJURISDICTIONAL waters of the United States, since the waters are NOT tributary to either a TNW or an (a)(3) water and are NOT (a)(3) waters themselves. The Corps makes such a conclusion since the waters are tributary to isolated dry lakes that do not qualify as TNWs or as (a)(3) waters, and since the waters themselves also do not qualify as (a)(3) waters..

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**
   Identify TNW: .

   Summarize rationale supporting determination: .

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under Rapanos have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

   (i) General Area Conditions:
   Watershed size: **Pick List**
   Drainage area: **Pick List**
   Average annual rainfall: inches
   Average annual snowfall: inches

   (ii) Physical Characteristics:
   (a) Relationship with TNW:
   ☐ Tributary flows directly into TNW.
   ☐ Tributary flows through **Pick List** tributaries before entering TNW.

   Project waters are **Pick List** river miles from TNW.
   Project waters are **Pick List** river miles from RPW.
   Project waters are **Pick List** aerial (straight) miles from TNW.
   Project waters are **Pick List** aerial (straight) miles from RPW.
   Project waters cross or serve as state boundaries. Explain: .

   Identify flow route to TNW[5]: .
   Tributary stream order, if known: .

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[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is:
- ☐ Natural
- ☐ Artificial (man-made). Explain: .
- ☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
- Average width: feet
- Average depth: feet
- Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):
- ☐ Silts
- ☐ Cobbles
- ☐ Bedrock
- ☐ Other. Explain: .
- ☐ Sands
- ☐ Gravel
- ☐ Vegetation. Type/% cover:
- ☐ Concrete
- ☐ Muck

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
- ☐ Dye (or other) test performed: .

Tributary has (check all that apply):
- ☐ Bed and banks
- ☐ OHWM[6] (check all indicators that apply):
  - ☐ clear, natural line impressed on the bank
  - ☐ changes in the character of soil
  - ☐ shelving
  - ☐ vegetation matted down, bent, or absent
  - ☐ leaf litter disturbed or washed away
  - ☐ sediment deposition
  - ☐ water staining
  - ☐ other (list):
  - ☐ the presence of litter and debris
  - ☐ destruction of terrestrial vegetation
  - ☐ the presence of wrack line
  - ☐ sediment sorting
  - ☐ scour
  - ☐ multiple observed or predicted flow events
  - ☐ abrupt change in plant community
- ☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
- ☐ High Tide Line indicated by:
  - ☐ oil or scum line along shore objects
  - ☐ fine shell or debris deposits (foreshore)
  - ☐ physical markings/characteristics
  - ☐ tidal gauges
  - ☐ other (list):
- ☐ Mean High Water Mark indicated by:
  - ☐ survey to available datum;
  - ☐ physical markings;
  - ☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

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[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:
Properties:
Wetland size: acres
Wetland type. Explain: .
Wetland quality. Explain: .
Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:
Flow is: **Pick List**. Explain: .

Surface flow is: **Pick List**
Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:
☐ Directly abutting
☐ Not directly abutting
☐ Discrete wetland hydrologic connection. Explain: .
☐ Ecological connection. Explain: .
☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW
Project wetlands are **Pick List** river miles from TNW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Flow is from: **Pick List.**
Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .
Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**
Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

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[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☐ U.S. Geological Survey Hydrologic Atlas: .
☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name: .
☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): .
or ☐ Other (Name & Date): .
☒ Previous determination(s). File no. and date of response letter:SPL-2009-881-SLP (2/26/2010).
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☒ Other information (please specify):Lucerne Valley Groundwater Basin: California Groundwater Bulletin #118; online Wikipedia page on Lucerne Valley, CA.

B. ADDITIONAL COMMENTS TO SUPPORT JD: This JD-2 pertains specifically to the non-RPW project waters (Drainages #W10–W15, #W37-W46, #W106-W109) that ultimately drain from the southeastern portions of the project site (southern subwatershed) to Lucerne dry lake.

All project Drainages #W10-W46 and #W100-W110 have been defined as non-RPWs ranging in length from 179-feet to 7243-feet long. The project site is hydrologically divided in a north-south direction, with the western half situated within the Northern Mojave watershed and the eastern half situated within the Southern Mojave watershed. The western half of the project site (Drainages #W21 –W26, #W36, #W101) ultimately drains 3-miles west to Apple Valley dry lake. The eastern half of the project site ultimately drains to Lucerne dry lake. The eastern half of the project site is further subdivided into northern and southern subwatersheds. The northern subwatershed (Drainages #W16 – W20, #W27-W35, #W100, #W102-W105, #W110) first drains to the east and northeast around Granite Mountain topographic high points, then drains southward ultimately to Lucerne dry lake (for a total distance of roughly 3-miles or more). The southern subwatershed (Drainages #W10–W15, #W37-W46, #W106-W109) drains in a southeast direction directly into Lucerne dry lake (for a total distance of roughly 0.25-mile to 2.50-miles).

Lucerne and Apple Valley dry lakes are both intrastate dry lakes. The non-RPWs typically convey flows in response to major storm events, with typical annual rainfall totals averaging 6- to 8-inches in these areas.

Lucerne dry lake is the elevational low point for the project drainages that fall within this local (eastern) area of Southern Mojave watershed, serving as the terminus for Drainages #W10-W20, #W27-W35, #W37-W46, #W100, #W102-W110, as well as for all other waters within this isolated intermontane basin. All surface flows that enter Lucerne dry lake percolate into the groundwater table. Surface waters for this Lucerne dry lake system are isolated from the Mojave River (located 15-aerial miles further to the west) by mountains that surround the dry lake on its west, north and eastern boundaries.

Apple Valley dry lake is the elevational low point for the project drainages that fall within this local (western) area of Northern Mojave watershed, serving as the terminus for Drainages #W21 –W26, #W36, #W101, as well as for all other waters within this isolated intermontane basin. All surface flows that enter Apple Valley dry lake percolate into the groundwater table. Surface waters for the Apple Valley dry lake system are isolated from the Mojave River (located 5.5-aerial miles further to the west) by mountains that surround the dry lake on its west and southwest boundaries.

Lucerne Lake, as the terminus for the 40 non-RPWs, is NOT a TNW. Moreover, Lucerne Lake is NOT an (a)(3) water as defined by 33 CFR 328.3. Lucerne Lake does NOT meet criteria (a)(3)(i-iii), as it: i) DOES NOT have use for surface water recreation or other purposes by foreign or interstate travelers, ii) DOES NOT have harvesting activities of fish or shellfish that may be sold in interstate or foreign commerce, and iii) DOES NOT have surface water industrial usage by industries in interstate commerce. Apple Valley Lake, as the terminus for the 8 non-RPWs, is also NOT a TNW. Moreover, Apple Valley Lake is NOT an (a)(3) water as defined by 33 CFR 328.3. Apple Valley Lake does NOT meet criteria (a)(3)(i-iii), as it: i) DOES NOT have use for surface water recreation or other purposes by foreign or interstate travelers, ii) DOES NOT have harvesting activities of fish or shellfish that may be sold in interstate or foreign commerce, and iii) DOES NOT have surface water industrial usage by industries in interstate commerce. Lastly, Drainages #W10-W46 and #W100-W110 themselves are NOT (a)(3) waters as defined by 33 CFR 328.3. The above is based upon the Addendum JD Report (dated September 21, 2010, prepared by Tetra Tech), the 2009 Town of Apple Valley General Plan, the online Wikipedia page on Lucerne Valley, CA, and the review of aerial photographs (Google Earth) that also did not show surface water usage of the project drainages or dry lakes. Therefore, since Lucerne Lake and Apple Valley Lake are isolated waters without a surface water connection to commerce, these 48 total non-RPWs as part of these overall watershed systems are also isolated and additionally have no nexus to commerce.

Based on the above information, the Corps concludes that Drainages #W10-W46 and #W100-W110 (isolated non-RPWs) are NONJURISDICTIONAL waters of the United States, since the waters are NOT tributary to either a TNW or an (a)(3) water and are NOT (a)(3) waters themselves. The Corps makes such a conclusion since the waters are tributary to isolated dry lakes that do not qualify as TNWs or as (a)(3) waters, and since the waters themselves also do not qualify as (a)(3) waters..

Table A-2
Water Features

Waters Name	Cowadin Code	HGM Code	Area (acres)	Linear (ft)	Waters Types	Latitude (nad83)	Longitude (nad83)	Local Waterway
W-10	R6	Riverine	0.3924	1140	Isolate	34.52914	-116.97078	W-10
W-11	R6	Riverine	0.2448	711	Isolate	34.52798	-116.97559	W-11
W-12	R6	Riverine	0.0765	370	Isolate	34.52839	-116.97849	W-12
W-13	R6	Riverine	0.0492	715	Isolate	34.52984	-116.98942	W-13
W-14	R6	Riverine	0.0679	740	Isolate	34.53000	-116.99064	W-14
W-15	R6	Riverine	0.0157	228	Isolate	34.53022	-116.99217	W-15
W-16	R6	Riverine	0.3860	2802	Isolate	34.57250	-116.97837	W-16
W-17	R6	Riverine	0.2577	2245	Isolate	34.57320	-116.98162	W-17
W-18	R6	Riverine	0.0206	599	Isolate	34.58140	-117.00850	W-18
W-19	R6	Riverine	0.0148	646	Isolate	34.58234	-117.01663	W-19
W-20	R6	Riverine	0.0100	434	Isolate	34.58234	-117.01831	W-20
W-21	R6	Riverine	0.5668	549	Isolate	34.55446	-117.05501	W-21
W-22	R6	Riverine	0.4583	570	Isolate	34.55635	-117.05623	W-22
W-23	R6	Riverine	0.1617	587	Isolate	34.55659	-117.05634	W-23
W-24	R6	Riverine	0.1679	610	Isolate	34.55729	-117.05711	W-24
W-25	R6	Riverine	0.1486	1295	Isolate	34.56677	-117.05477	W-25
W-26	R6	Riverine	0.0370	537	Isolate	34.56887	-117.05440	W-26
W-27	R6	Riverine	0.0728	1057	Isolate	34.56918	-116.99673	W-27
W-28	R6	Riverine	0.1703	1349	Isolate	34.56835	-116.99983	W-28
W-29	R6	Riverine	0.0855	745	Isolate	34.56533	-117.00323	W-29
W-30	R6	Riverine	0.0632	1376	Isolate	34.56061	-117.00746	W-30
W-31	R6	Riverine	0.0428	621	Isolate	34.55711	-117.01150	W-31
W-32	R6	Riverine	0.3446	600	Isolate	34.55370	-117.01602	W-32
W-33	R6	Riverine	0.0891	555	Isolate	34.55161	-117.02092	W-33
W-34	R6	Riverine	0.0321	200	Isolate	34.54846	-117.03073	W-34
W-35	R6	Riverine	0.0321	200	Isolate	34.54566	-117.03409	W-35
W-36	R6	Riverine	1.4913	4331	Isolate	34.55218	-117.04784	W-36
W-37	R6	Riverine	0.1522	189	Isolate	34.53706	-116.95934	W-37
W-38	R6	Riverine	0.0174	252	Isolate	34.53674	-116.95984	W-38
W-39	R6	Riverine	0.0172	250	Isolate	34.53598	-116.96063	W-39
W-40	R6	Riverine	0.0176	255	Isolate	34.53556	-116.96128	W-40
W-41	R6	Riverine	0.0092	201	Isolate	34.53514	-116.96166	W-41
W-42	R6	Riverine	0.0092	200	Isolate	34.53409	-116.96316	W-42
W-43	R6	Riverine	0.0845	184	Isolate	34.53350	-116.96360	W-43
W-44	R6	Riverine	0.0179	194	Isolate	34.53307	-116.96398	W-44
W-45	R6	Riverine	0.0138	200	Isolate	34.53216	-116.96513	W-45
W-46	R6	Riverine	0.0749	544	Isolate	34.53046	-116.96723	W-46
W-100	R6	Riverine	0.1663	7243	Isolate	34.58300	-117.03000	W-100
W-101	R6	Riverine	0.0138	200	Isolate	34.57600	-117.05100	W-101
W-102	R6	Riverine	0.0321	200	Isolate	34.54500	-117.03500	W-102
W-103	R6	Riverine	0.0416	603	Isolate	34.55600	-117.01300	W-103
W-104	R6	Riverine	0.2296	200	Isolate	34.55000	-117.02100	W-104
W-105	R6	Riverine	0.0246	179	Isolate	34.57100	-116.96400	W-105
W-106	R6	Riverine	0.0352	766	Isolate	34.53300	-117.01500	W-106
W-107	R6	Riverine	0.0175	254	Isolate	34.53200	-117.00700	W-107
W-108	R6	Riverine	0.0318	346	Isolate	34.52900	-116.98700	W-108
W-109	R6	Riverine	0.0271	295	Isolate	34.52900	-116.98300	W-109
W-110	R6	Riverine	0.0370	230	Isolate	34.55032	-117.02057	W-110

Water Features: Terminus

Waters Name	Area (acres)	Linear (ft)	Latitude (nad83)	Longitude (nad83)	Terminus
W-10	0.3924	1140	34.52914	-116.97078	From SE directly to Lucerne Dry Lake
W-11	0.2448	711	34.52798	-116.97559	From SE directly to Lucerne Dry Lake
W-12	0.0765	370	34.52839	-116.97849	From SE directly to Lucerne Dry Lake
W-13	0.0492	715	34.52984	-116.98942	From SE directly to Lucerne Dry Lake
W-14	0.0679	740	34.53000	-116.99064	From SE directly to Lucerne Dry Lake
W-15	0.0157	228	34.53022	-116.99217	From SE directly to Lucerne Dry Lake
W-16	0.3860	2802	34.57250	-116.97837	From the N/NE south to Lucerne Dry Lake
W-17	0.2577	2245	34.57320	-116.98162	From the N/NE south to Lucerne Dry Lake
W-18	0.0206	599	34.58140	-117.00850	From the N/NE south to Lucerne Dry Lake
W-19	0.0148	646	34.58234	-117.01663	From the N/NE south to Lucerne Dry Lake
W-20	0.0100	434	34.58234	-117.01831	From the N/NE south to Lucerne Dry Lake
W-21	0.5668	549	34.55446	-117.05501	Apple Valley Dry Lake
W-22	0.4583	570	34.55635	-117.05623	Apple Valley Dry Lake
W-23	0.1617	587	34.55659	-117.05634	Apple Valley Dry Lake
W-24	0.1679	610	34.55729	-117.05711	Apple Valley Dry Lake
W-25	0.1486	1295	34.56677	-117.05477	Apple Valley Dry Lake
W-26	0.0370	537	34.56887	-117.05440	Apple Valley Dry Lake
W-27	0.0728	1057	34.56918	-116.99673	From the N/NE south to Lucerne Dry Lake
W-28	0.1703	1349	34.56835	-116.99983	From the N/NE south to Lucerne Dry Lake
W-29	0.0855	745	34.56533	-117.00323	From the N/NE south to Lucerne Dry Lake
W-30	0.0632	1376	34.56061	-117.00746	From the N/NE south to Lucerne Dry Lake
W-31	0.0428	621	34.55711	-117.01150	From the N/NE south to Lucerne Dry Lake
W-32	0.3446	600	34.55370	-117.01602	From the N/NE south to Lucerne Dry Lake
W-33	0.0891	555	34.55161	-117.02092	From the N/NE south to Lucerne Dry Lake
W-34	0.0321	200	34.54846	-117.03073	From the N/NE south to Lucerne Dry Lake
W-35	0.0321	200	34.54566	-117.03409	From the N/NE south to Lucerne Dry Lake
W-36	1.4913	4331	34.55218	-117.04784	Apple Valley Dry Lake
W-37	0.1522	189	34.53706	-116.95934	From SE directly to Lucerne Dry Lake
W-38	0.0174	252	34.53674	-116.95984	From SE directly to Lucerne Dry Lake
W-39	0.0172	250	34.53598	-116.96063	From SE directly to Lucerne Dry Lake
W-40	0.0176	255	34.53556	-116.96128	From SE directly to Lucerne Dry Lake
W-41	0.0092	201	34.53514	-116.96166	From SE directly to Lucerne Dry Lake
W-42	0.0092	200	34.53409	-116.96316	From SE directly to Lucerne Dry Lake
W-43	0.0845	184	34.53350	-116.96360	From SE directly to Lucerne Dry Lake
W-44	0.0179	194	34.53307	-116.96398	From SE directly to Lucerne Dry Lake
W-45	0.0138	200	34.53216	-116.96513	From SE directly to Lucerne Dry Lake
W-46	0.0749	544	34.53046	-116.96723	From SE directly to Lucerne Dry Lake
W-100	0.1663	7243	34.58300	-117.03000	From the N/NE south to Lucerne Dry Lake
W-101	0.0138	200	34.57600	-117.05100	Apple Valley Dry Lake
W-102	0.0321	200	34.54500	-117.03500	From the N/NE south to Lucerne Dry Lake
W-103	0.0416	603	34.55600	-117.01300	From the N/NE south to Lucerne Dry Lake
W-104	0.2296	200	34.55000	-117.02100	From the N/NE south to Lucerne Dry Lake
W-105	0.0246	179	34.57100	-116.96400	From the N/NE south to Lucerne Dry Lake
W-106	0.0352	766	34.53300	-117.01500	From SE directly to Lucerne Dry Lake
W-107	0.0175	254	34.53200	-117.00700	From SE directly to Lucerne Dry Lake
W-108	0.0318	346	34.52900	-116.98700	From SE directly to Lucerne Dry Lake
W-109	0.0271	295	34.52900	-116.98300	From SE directly to Lucerne Dry Lake
W-110	0.0370	230	34.55032	-117.02057	From the N/NE south to Lucerne Dry Lake

Figure A-1
Watersheds

Granite Mountain
Wind Project

res AMERICAS powering change

Legend

- Ephemeral Stream
- Proposed T-line
- Project Boundary
- Substation
- Watershed Boundary
- Subwatershed Boundary
- Dry Lake/Topographic Low
- Watershed Drainage Direction

Sources: ESRI Streams 2008, USDA NRCS Watersheds 2008, USGS 24k Quads 1985.

N

0 1 2
Miles

Nad 1927 UTM Zone 11 North

TETRA TECH EC, INC.

Apple Valley Dry Lake

Lucerne Lake

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Figure A-3
Waters Survey Area

Granite Mountain
Wind Project

res AMERICAS powering change

Legend

- Water Crossing *
- Proposed Turbine
- Met Tower
- Ephemeral Stream
- Existing T-line
- Proposed T-line
- Proposed Access Road
- Project Boundary
- Batch Plant/Crushing Plant
- Stockpile
- O & M Building
- Site Office
- Staging Area
- Substation
- Turbine Staging Area
- Waters Survey Area
- Detail Map Extent

* Points w-10 to w-46: Initial Field and Topo Surveys (6/26/07 - 4/13/10)

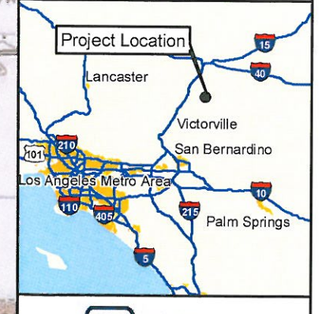
Points w-100 to w-110: Topo and Stream Analysis (8/19/10)

Sources: ESRI Streams 2008, USGS 24k Quads 1985.

N

0 0.25 0.5
Miles

Nad 1927 UTM Zone 11 North



TETRA TECH EC, INC.

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Worksheet for Circular Pipe - 72

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.024	
Channel Slope	0.07140	ft/ft
Normal Depth	6.00	ft
Diameter	6.00	ft
Discharge	612.94	ft^3/s

Results

Discharge	612.94	ft^3/s
Normal Depth	6.00	ft
Flow Area	28.27	ft^2
Wetted Perimeter	18.85	ft
Top Width	0.00	ft
Critical Depth	5.85	ft
Percent Full	100.0	%
Critical Slope	0.06327	ft/ft
Velocity	21.68	ft/s
Velocity Head	7.30	ft
Specific Energy	13.30	ft
Froude Number	0.00	
Maximum Discharge	659.35	ft^3/s
Discharge Full	612.94	ft^3/s
Slope Full	0.07140	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Circular Pipe - 72

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.00	ft
Critical Depth	5.85	ft
Channel Slope	0.07140	ft/ft
Critical Slope	0.06327	ft/ft

Worksheet for Circular Pipe - 36"

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.024	
Channel Slope	0.04760	ft/ft
Normal Depth	3.00	ft
Diameter	3.00	ft
Discharge	78.82	ft³/s

Results

Discharge	78.82	ft³/s
Normal Depth	3.00	ft
Flow Area	7.07	ft²
Wetted Perimeter	9.42	ft
Top Width	0.00	ft
Critical Depth	2.76	ft
Percent Full	100.0	%
Critical Slope	0.04133	ft/ft
Velocity	11.15	ft/s
Velocity Head	1.93	ft
Specific Energy	4.93	ft
Froude Number	0.00	
Maximum Discharge	84.79	ft³/s
Discharge Full	78.82	ft³/s
Slope Full	0.04760	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

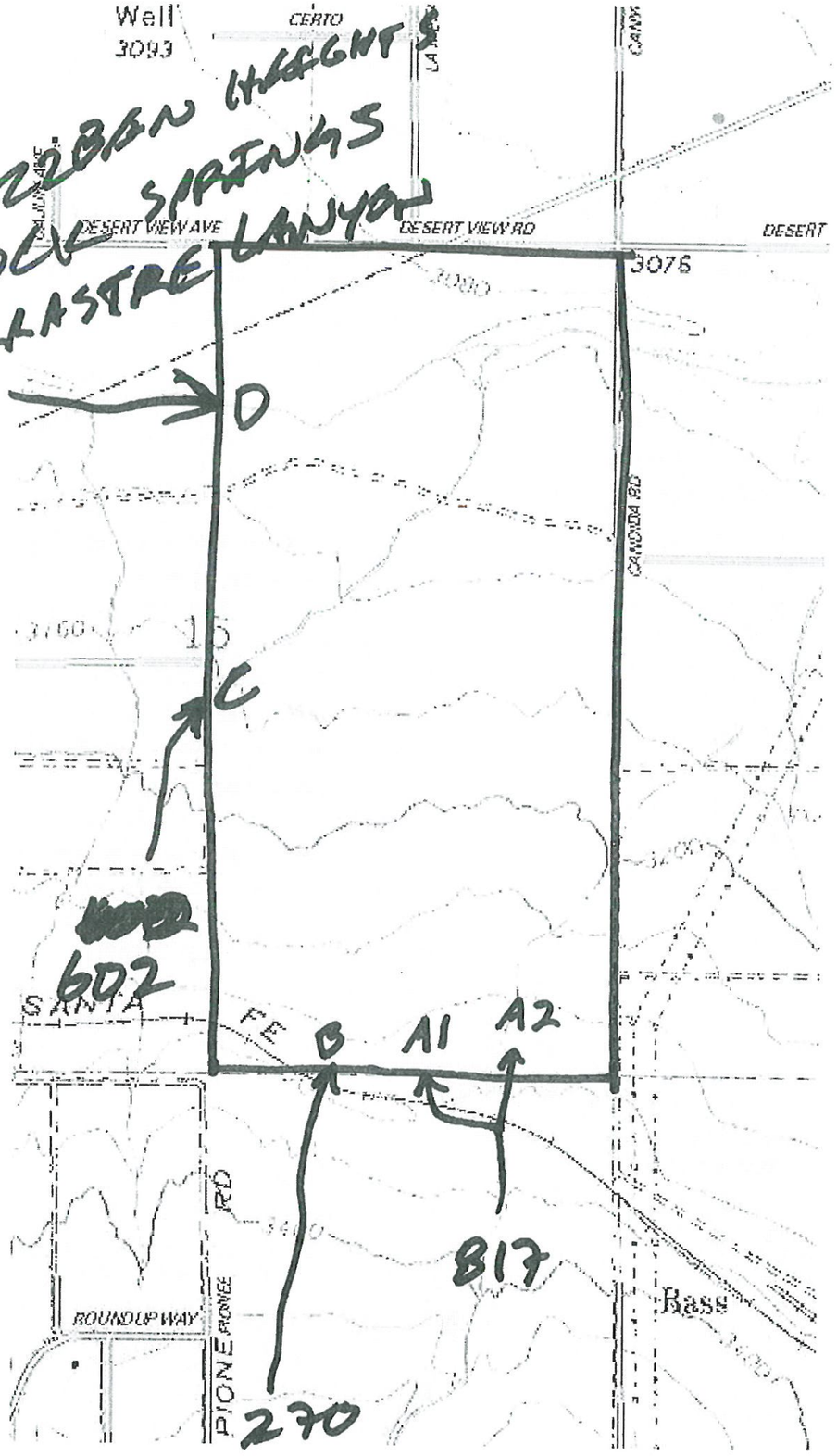
GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Circular Pipe - 36"

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.00	ft
Critical Depth	2.76	ft
Channel Slope	0.04760	ft/ft
Critical Slope	0.04133	ft/ft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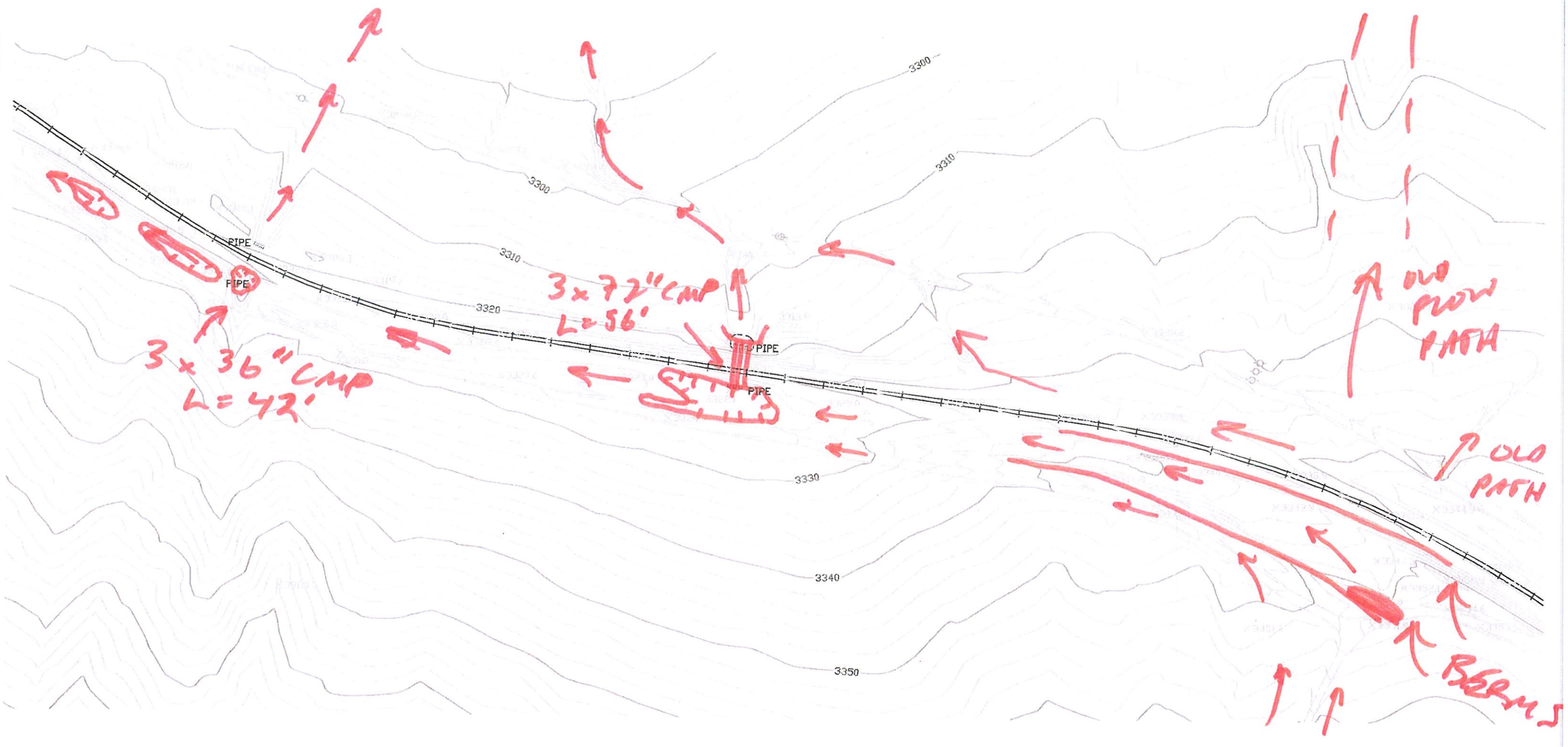
3093
CERRO
DESERT VIEW AVE
DESERT VIEW RD
DESERT
3076
CANYON RD
3100
15
SANTA
FE
ROUND UP WAY
PIONEER RD
Base
FEDERAL HEIGHT
ROCK SPRINGS
ALLASTRE CANYON
D
C
602
B
A1
A2
817
270

RESULTS OF FIELD INSPECTION



Appendix B

C.U.P.-SITE PLAN-LUCERNE VALLEY DESERT VIEW SOLAR

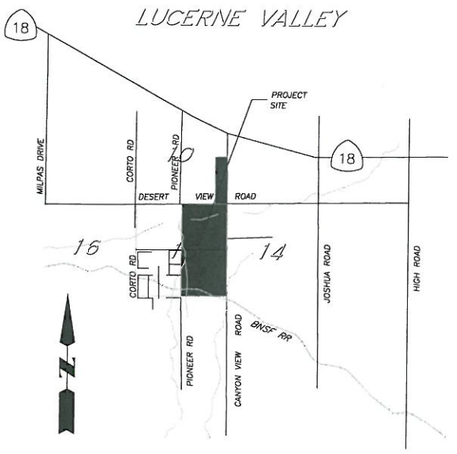
20 MW SOLAR PHOTOVOLTAIC SYSTEM

IN THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA

BEING A PORTION OF SECTIONS 10 & 15, TOWNSHIP 4 NORTH, RANGE 2 WEST, SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF.

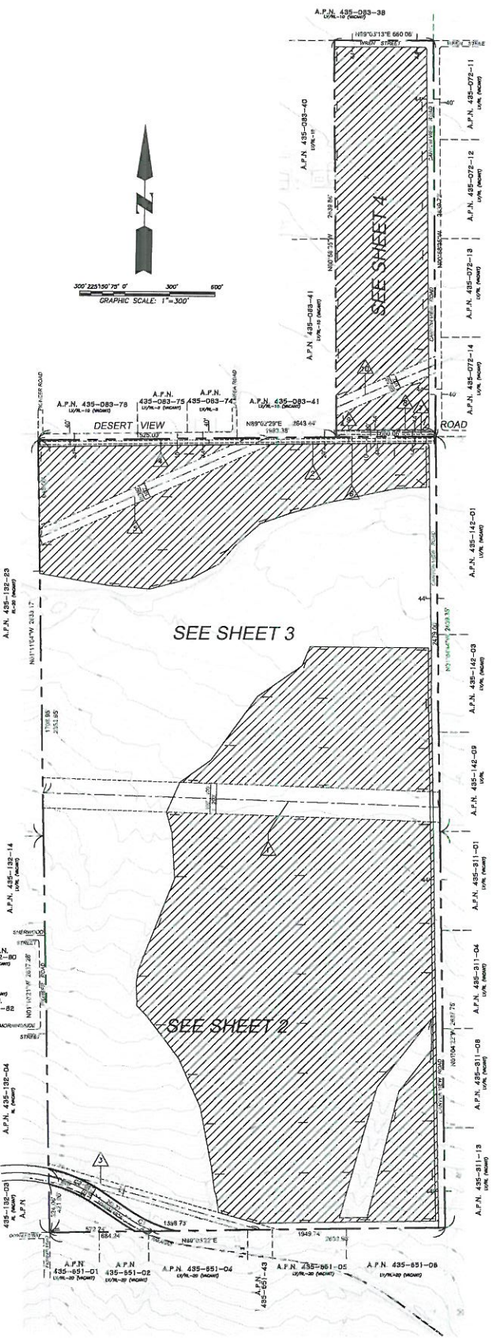
UNITED ENGINEERING GROUP CA., INC NOVEMBER 2011

"OFFICIAL USE ONLY"



VICINITY MAP

N.T.S.



BENCHMARK:

NGS POINT "PIONIT" (PID EV3534) ELEVATION = 3017.37 NAVD 88. STANDARD DISC, STAMPED POINT 1965, SET IN THE TOP OF A 12 INCH ROUND CONCRETE MONUMENT.

LEGAL DESCRIPTION:

ALL THAT REAL PROPERTY SITUATED IN THE UNINCORPORATED AREA OF THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

PARCEL 1:

THE EAST ONE-HALF OF SECTION 15, TOWNSHIP 4 NORTH, RANGE 2 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, ACCORDING TO GOVERNMENT SURVEY.

SAVING AND EXCEPTING THAT PORTION DEEDED TO THE ATCHISON, TOPEKA, AND SANTA FE RAILWAY COMPANY, A KANSAS CORPORATION, BY JOHN ZIEGLER, IDA MARTIN, AND JOSEPH ZIEGLER, IN DEED DATED MARCH 6, 1958, AND RECORDED MARCH 29, 1956 IN BOOK 3897 OF OFFICIAL RECORDS, PAGE 163, AS INSTRUMENT NO. 27.

APN: 0435-132-01

PARCEL 2:

THE EAST 40 ACRES OF THE SOUTHEAST ONE-QUARTER OF SECTION 10, TOWNSHIP 4 NORTH, RANGE 2 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

APN: 435-083-39

CURVE DATA:

C1 R=955.37 L=187.89 Δ=11°16'05" T=94.25
C2 R=955.37 L=353.56 Δ=21°12'14" T=178.83

SITE PLAN GRADING NOTE:

PROPOSED SITE PREPARATION WILL CONSIST OF CLEARING GRUBBING AND SCARIFYING, WITH MINOR GRADING TO REMOVE ANY MOUNDS, HOLES OR DITCHES THAT HAVE BEEN LEFT AS PART OF THE PREVIOUS AGRICULTURAL USE. THE INTENT IS TO CLEAR AND SMOOTH THE SITE TO A NEAR NATURAL CONDITION. NO CUT OR FILL SLOPES ARE PROPOSED WITHIN THE "PROJECT LIMITS" EXCEPT FOR THE PROPOSED DRIVEWAY ACCESS.

FLOOD ZONE NOTE:

PER FEMA PANEL No. 06071C1NDS1, THE SUBJECT PROPERETY IN WITHIN PANEL No. 06071C6550H, PANEL No. 06071C6550H IS NOT PRINTED. THE SUBJECT SITE AREA IS ALL WITHIN ZONE "D". ZONE "D" IS DESCRIBED AS AREAS IN WHICH FLOOD HAZARDS ARE UNDETERMINED, BUT POSSIBLE. NO FLOOD HAZARD ANALYSIS HAS BEEN CONDUCTED.

SURVEYOR'S NOTE:

THIS RECORD BOUNDARY MAP HAS BEEN PREPARED AND COMPILED FROM RECORD DATA ALONG WITH THE FIELD SURVEY INFORMATION PROVIDED BY THE ALTA/ACSM LAND TITLE SURVEY PREPARED BY MERRELL-JOHNSON ENGINEERING, INC., DATED 6-14-05. THE TITLE INFORMATION HAS BEEN PROVIDED BY FIRST AMERICAN TITLE INSURANCE COMPANY, ORDER NO.'s: NCS-450594-ONT1, EFFECTIVE DATE OF AUGUST 4, 2011 AND NCS-491247-SD EFFECTIVE DATE JUNE 2, 2011. THE SUBJECT BOUNDARY HAS BEEN COMPILED FROM THE BEST AVAILABLE RECORDED INFORMATION AND NOT TO BE CONSTRUED AS A SURVEY IN ANY WAY. THE ECUMBRANCES HAVE BEEN SHOWN FOR INFORMATION PURPOSES ONLY AND UNITED ENGINEERING GROUP CALIFORNIA, INC., IMPLIES NO WARRANTY, OR CERTIFICATION, AS TO THE ACCURACY OF THE RECORD INFORMATION UTILIZED IN THE PREPARATION OF THIS MAP.

EASEMENT NOTES:

1. AN EASEMENT FOR POLE LINES AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY RECORDED MAY 21, 1937 IN BOOK 1203, PAGE 478 OF OFFICIAL RECORDS.
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10. AN EASEMENT FOR RIGHT OF WAY AS SET FORTH IN A DOCUMENT GRANTED TO SOUTHERN COUNTIES GAS COMPANY OF CALIFORNIA RECORDED JANUARY 8, 1939 IN BOOK 4697, PAGE 138 OF OFFICIAL RECORDS.

GENERAL NOTES:

1. ASSESSOR'S PARCEL NO.: APN: 0435-132-01 AND APN: 435-083-39
2. THE PROPERTY SHOWN HEREIN CONTAINS THE ENTIRE CONTIGUOUS OWNERSHIP.
3. EXISTING & PROPOSED GENERAL PLAN: LV/RL-20---LUCERNE VALLEY/RURAL LIVING-20 ACRE MINIMUM.
4. CONTOUR INTERVAL = 2 FOOT CONTOURS.
5. "DESERT VIEW ROAD", "WREN STREET" AND "CANYON VIEW ROAD" ARE IRREVOCABLE OFFERS OF DEDICATIONS FOR PUBLIC STREET AND UTILITY PURPOSES. SAID ROADS WILL NOT BE IMPROVED AS PART OF THIS SITE PLAN AND WILL REMAIN AS EXISTING DIRT ROADS.
6. DIMENSIONS AND ACREAGES SHOWN HEREON ARE APPROXIMATE AND COMPILED FROM RECORD DATA AND DO NOT REFLECT A BOUNDARY SURVEY.
7. PROPOSED USE IS A FIXED PANEL PHOTOVOLTAIC SOLAR FARM WITH NO PROPOSED BUILDINGS OR FACILITIES OTHER THAN THE STANDARD INVERTER PADS, WIRING AND SWITCH GEAR THAT ACCOMPANIES THE FIXED PANEL SYSTEM.
8. SITE AREAS:

   BOUNDARY--GROSS AREA = 359.64 ACRES
   PROJECT LIMITS AREA* = 198.07 ACRES

   NOTE: * PROJECT LIMITS AREA DOES NOT INCLUDE STREET DEDICATIONS, EXISTING ROADWAYS OR EASEMENT AREAS.

UTILITY NOTES:

WATER: NO ONSITE WATER SERVICE WILL BE REQUIRED
SEWER: NO ONSITE SEWER/SEPTIC SERVICE WILL BE REQUIRED
GAS: NO ONSITE GAS SERVICE WILL BE REQUIRED
ELECTRICITY: SOUTHERN CALIFORNIA EDISON
TELEPHONE: NO ONSITE TELEPHONE SERVICE WILL BE REQUIRED
CABLE TV: NO ONSITE CABLE TV SERVICE WILL BE REQUIRED

LEGEND:

- SITE BOUNDARY
- EXISTING FENCE
- 3080 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED SOLAR PANEL PLACEMENT AREAS
- EXISTING EASEMENT

OWNER:

320 HIGHWAY 18 AV, LLC
12671 HIGH BLUFF DR.
SUITE 150
SAN DIEGO, CA. 92130
(858) 523-0719

PAUL MARKEL, ELIZABETH MEREDITH & CAROL PAKULNIK
5092 PRINCETON AVENUE
WESTMINSTER, CA 92683

APPLICANT:

LUCERNE VALLEY DESERT VIEW RANCH, LLC
44 MONTGOMERY STREET, SUITE 3083
SAN FRANCISCO, CA 94104
(415) 692-7733

SUBMITTALS:	REVISIONS NO.	DESCRIPTION	DATE

DESIGNED BY:
DRAWN BY:
CHECKED BY:

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER F. LENZ NO. 63001 EXP. 9/30/12 CIVIL STATE OF CALIFORNIA

PREPARED UNDER MY SUPERVISION:
CHRISTOPHER F. LENZ 11/15/11
R.C.E. No. 63001 DATE

LICENSED LAND SURVEYOR DEAN C. PHILLIPS EXP. 9/30/13 NO. 6974 STATE OF CALIFORNIA

PREPARED UNDER MY SUPERVISION:
DEAN C. PHILLIPS 11/15/11
L.S. No. 6974 DATE

ueg united engineering group

2575 Inland Empire Blvd. Suite 220 Ontario, CA 91764 Phone: 909.605.9260 Fax: 909.949.8611 www.unitedengr.com

SITE PLAN

LUCERNE VALLEY DESERT VIEW SOLAR
20 MW SOLAR PHOTOVOLTAIC SYSTEM
PORTION OF SECTIONS 10 & 15, T. 4 N., R. 2 W., S.B.B.M.
A.P.N.'s 0435-083-39 & 0435-132-01

DATE PREPARED: NOV. 15, 2011
SHEET 1 OF 4
PROJECT NUMBER CA-40003

C.U.P.-SITE PLAN-LUCERNE VALLEY DESERT VIEW SOLAR

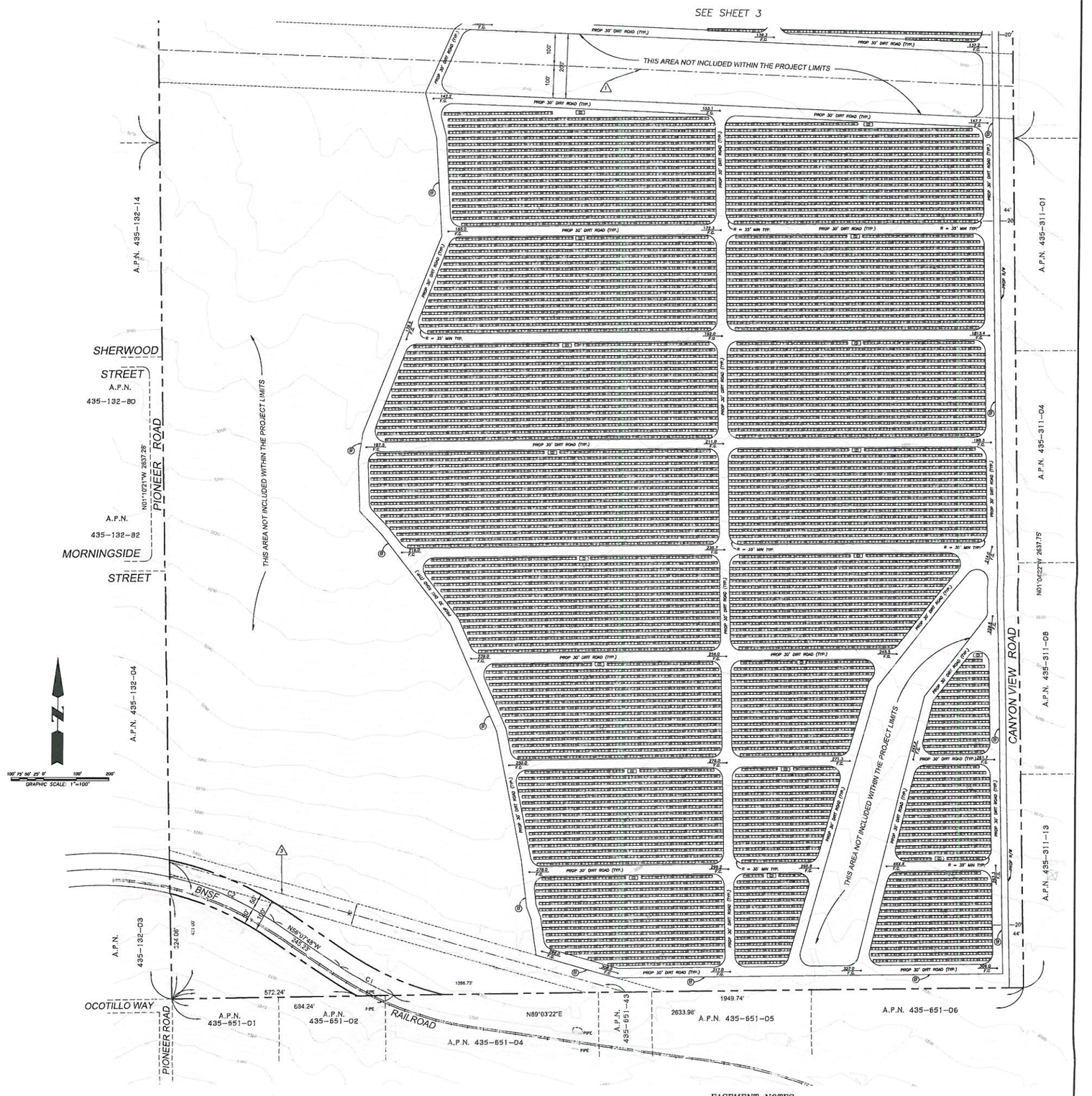
20 MW SOLAR PHOTOVOLTAIC SYSTEM

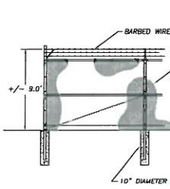
IN THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA

BEING A PORTION OF SECTIONS 10 & 15, TOWNSHIP 4 NORTH, RANGE 2 WEST, SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF.

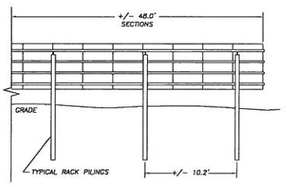
UNITED ENGINEERING GROUP CA., INC NOVEMBER 2011

"OFFICIAL USE ONLY"

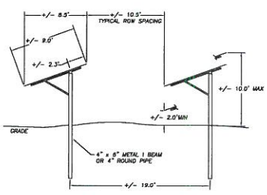




TYPICAL CHAIN LINK SECURITY FENCE DETAIL
ELEVATION NTS



TYPICAL SOLAR ARRAY RACK DETAIL
ELEVATION NTS



TYPICAL SOLAR ARRAY RACK DETAIL
SECTION NTS

EASEMENT NOTES:

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PROPOSED SITE PREPARATION WILL CONSIST OF CLEARING, GRUBBING AND SCARIFYING, WITH MINOR GRADING TO REMOVE ANY MOUNDS, HOLES OR DITCHES THAT HAVE BEEN LEFT AS PART OF THE PREVIOUS AGRICULTURAL USE. THE INTENT IS TO CLEAR AND SMOOTH THE SITE TO A NEAR NATURAL CONDITION. NO CUT OR FILL SLOPES ARE PROPOSED WITHIN THE "PROJECT LIMITS" EXCEPT FOR THE PROPOSED DRIVEWAY ACCESS.

CURVE DATA:

C1 R=855.37 L=187.89 Δ=11°16'05" T=94.25
C2 R=955.37 L=353.56 Δ=21°12'14" T=178.83

LEGEND:

- SITE BOUNDARY
- EXISTING FENCE
- PROPOSED SOLAR PANELS
- 3280 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED EQUIPMENT PAD
- (A) PROPOSED INTERIOR FENCE FOR SUBSTATION ENCLOSURE
- (B) PROPOSED PERIMETER FENCE PER DETAIL HEREON
- (C) PROPOSED GATE PER FIRE DEPARTMENT REQUIREMENTS
- 1 EXISTING EASEMENT
- 123.4 F.G. PROPOSED FINISH GRADE

SUBMITTALS:	REVISIONS NO.	DESCRIPTION	DATE
DESIGNED BY:			
DRAWN BY:			
CHECKED BY:			

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER F. LENZ No. 63001 EXP. 6/30/12 CIVIL STATE OF CALIFORNIA

PREPARED UNDER MY SUPERVISION:
CHRISTOPHER F. LENZ DATE 11/15/11
R.C.E. No. 63001

LICENSED LAND SURVEYOR DEAN C. PHILLIPS EXP. 9/30/13 No. 6974 STATE OF CALIFORNIA

PREPARED UNDER MY SUPERVISION:
DEAN C. PHILLIPS DATE 11/15/11
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ueg united engineering group
3576 Inland Empire Blvd.
Suite 2268
Ontario, CA 91764
Phone: 909.466.9240
Fax: 909.932.3601
www.ueg-group.com

SITE PLAN

LUCERNE VALLEY DESERT VIEW
20 MW SOLAR PHOTOVOLTAIC SYSTEM
PORTION OF SECTIONS 10 & 15, T. 4 N., R. 2 W., S.B.B.M.
A.P.N.'S 0435-083-39 & 0435-132-01

DATE PREPARED: NOV. 15, 2011
SHEET 2 OF 4
PROJECT NUMBER CA-40003

C.U.P.-SITE PLAN-LUCERNE VALLEY DESERT VIEW SOLAR

20 MW SOLAR PHOTOVOLTAIC SYSTEM

IN THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA
BEING A PORTION OF SECTIONS 10 & 15, TOWNSHIP 4 NORTH, RANGE 2 WEST, SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF.

UNITED ENGINEERING GROUP CA., INC NOVEMBER 2011

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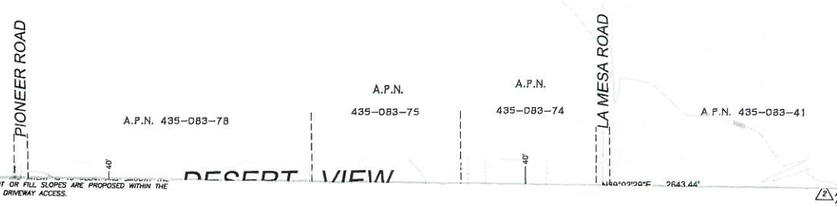
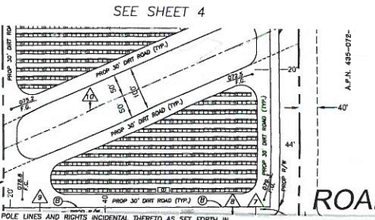
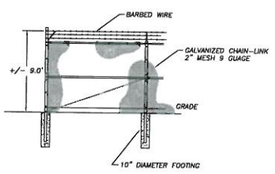
SEE SHEET 4

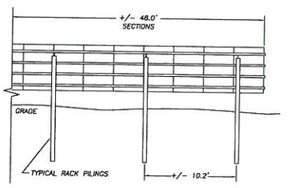




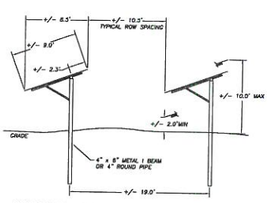
SITE TO A NEAR NATURAL CONDITION. NO CUT OR FILL SLOPES ARE PROPOSED WITHIN THE "PROJECT LIMITS" EXCEPT FOR THE PROPOSED DRIVEWAY ACCESS.



TYPICAL CHAIN LINK SECURITY FENCE DETAIL
ELEVATION *NTS*



TYPICAL SOLAR ARRAY RACK DETAIL
ELEVATION *NTS*



TYPICAL SOLAR ARRAY RACK DETAIL
SECTION *NTS*

2 AN EASEMENT FOR POLE LINES AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT GRANTED TO CALIFORNIA ELECTRIC POWER COMPANY RECORDED DECEMBER 21, 1948 IN BOOK 1970, PAGE 432 OF OFFICIAL RECORDS.

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SUBMITTALS:	REVISIONS NO.	DESCRIPTION	DATE
DESIGNED BY:			
DRAWN BY:			
CHECKED BY:			

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER F. LENZ NO. 83001 EXP. 6/30/13 CIVIL STATE OF CALIFORNIA

PREPARED UNDER MY SUPERVISION:
CHRISTOPHER F. LENZ R.C.E. No. 83001 — DATE 11/15/11

LICENSED LAND SURVEYOR DEAN C. PHILLIPS EXP. 9/30/13 NO. 6974 STATE OF CALIFORNIA

PREPARED UNDER MY SUPERVISION:
DEAN C. PHILLIPS L.S. No. 6974 — DATE 11/15/11

ueg united engineering group
2519 Inland Empire Blvd.
Suite 230
Ontario, CA 91764
Phone: 909.418.9261
Fax: 909.980.3051
www.unitedengrg.com

SITE PLAN

LUCERNE VALLEY DESERT VIEW
20 MW SOLAR PHOTOVOLTAIC SYSTEM
PORTION OF SECTIONS 10 & 15, T. 4 N., R. 2 W., S.B.B.M.
A.P.N.'s 0435-081-39 & 0435-132-01

DATE PREPARED: NOV. 15, 2011
SHEET 3 OF 4
PROJECT NUMBER: CA-40003

C.U.P.-SITE PLAN-LUCERNE VALLEY DESERT VIEW SOLAR

20 MW SOLAR PHOTOVOLTAIC SYSTEM

IN THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA

BEING A PORTION OF SECTIONS 10 & 15, TOWNSHIP 4 NORTH, RANGE 2 WEST, SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF.

UNITED ENGINEERING GROUP CA., INC NOVEMBER 2011

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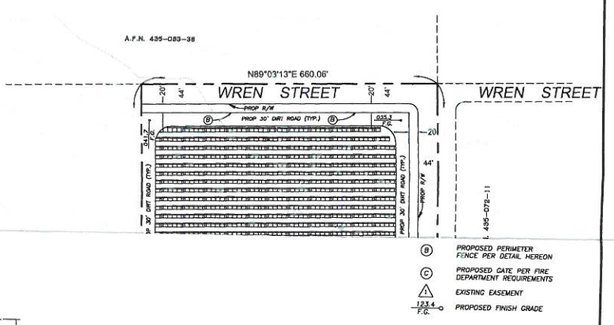
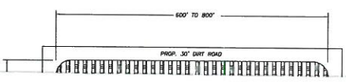
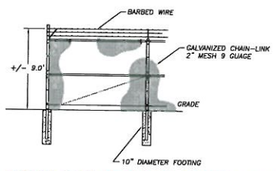
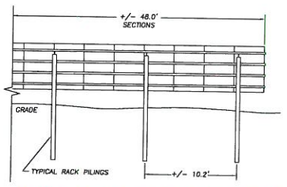


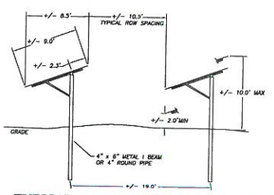




TYPICAL CHAIN LINK SECURITY FENCE DETAIL
ELEVATION NTS



TYPICAL SOLAR ARRAY RACK DETAIL
ELEVATION NTS



TYPICAL SOLAR ARRAY RACK DETAIL
SECTION NTS

SITE PLAN GRADING NOTE:

PROPOSED SITE PREPARATION WILL CONSIST OF CLEARING GRUBBING AND SCARIFYING, WITH MINOR GRADING TO REMOVE ANY MOUNDS, HOLES OR DITCHES THAT HAVE BEEN LEFT AS PART OF THE PREVIOUS AGRICULTURAL USE. THE INTENT IS TO CLEAN AND SMOOTH THE SITE TO A NEAR NATURAL CONDITION. NO CUT OR FILL SLOPES ARE PROPOSED WITHIN THE "PROJECT LIMITS" EXCEPT FOR THE PROPOSED DRIVEWAY ACCESS.

SUBMITTALS:	REVISIONS		
	NO.	DESCRIPTION	DATE
DESIGNED BY:			
DRAWN BY:			
CHECKED BY:			

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER F. LENZ NO. 63001 EXP. 6/30/13 CIVIL STATE OF CALIFORNIA

PREPARED UNDER MY SUPERVISION:

CHRISTOPHER F. LENZ 11/15/11
R.C.E. No. 63001 DATE

LICENSED LAND SURVEYOR DEAN C. PHILLIPS EXP. 6/30/13 NO. 6974 STATE OF CALIFORNIA

PREPARED UNDER MY SUPERVISION:

DEAN C. PHILLIPS 11/15/11
L.S. No. 6974 DATE

ueg united engineering group

7576 Milliken Ave Suite 220 Rancho Cucamonga, CA 91730 Phone: 909.466.9280 Fax: 909.466.9281 www.unitedeng.com

SITE PLAN

LUCERNE VALLEY DESERT VIEW
20 MW SOLAR PHOTOVOLTAIC SYSTEM
PORTION OF SECTIONS 10 & 15, T. 4 N., R. 2 W., S.B.B.M.
A.P.N.'s 0435-083-39 & 0435-132-01

DATE PREPARED: NOV. 15, 2011
SHEET 4 OF 4
PROJECT NUMBER CA-40003